

Measuring Productivity, Efficiency, and Effectiveness in Fire, Rescue & EMS



Moderator

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Presenters

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Objectives



- Identify the problems and challenges associated with measurement
- Discuss basic and more advanced measuring and reporting
- Identify public policy issues that may drive measuring and reporting
- Discuss key experiences
- Share suggested best practices and take-aways

(some of) The Problem:



- Only required reporting is NFIRS, but no formal standards adopted for measuring performance.
- What are agencies measuring? Why?
- Outputs compared to Outcomes. What's the difference?
- How do we define efficiency? Do we even have a common understanding of what constitutes effectiveness?
- Who is asking about your performance if anyone?
- What standards are agencies using or measuring against – NFPA, CFAI?

The Problem Is?????



- Are these actually valid and attainable?
 - Turn-out times
 - Averages



The Problem Is?????



- What has the Fire Service historically measured?
 - Call volume
 - Incident type
 - Average response time
 - Fire loss
 - Property saved



The Old “Firefighters Per One Thousand” Story

- “Firefighters per 1,000” or “Firefighters per Capita”
 - The only direct correlation between FF’s per Capita and an outcome is an increase in the budget. REFERENCE: Smarter, Faster, Cheaper. IBM Global Business Services 2011.
 - There are no studies to correlate this to any important fire service outcomes (i.e., reduction in injury rates to civilians or FF’s, less fire loss, higher EMS survivability rates, etc.).



Why do we still use this figure?

- Tradition?
- It used to work!!!
- Maybe agencies feel (emotional argument) they are below some optimal number and they are attempting to use it to justify additional staffing.



Property Saved vs. Property Loss

- What does property saved actually tell us?
- How well do we actually estimate fire loss and property saved?
- What other data sets could be better at telling our message?



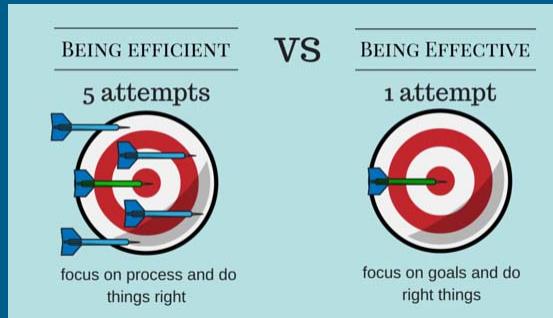
The Problem Is?????

- Why does the Fire Service measure these items?
 - Easy data to extract from NFIRS
 - Good data is hard to get in the fire service
 - Always been done, so agencies have years of data to compare to
 - No real set of benchmarks for agencies to meet
 - Does City Manager or City Council want more details?



Basic Foundation: Measuring Efficiency and Effectiveness

- Average vs. 90%
- Outputs vs Outcomes
- Activities
- Bias
- Standard Deviations



Output Measurements

- Calls for service
- Training Hours
- Number of fire prevention inspections
- Number of smoke detectors installed
- Number of children educated in Fire Prevention
- Unit Hours of Utilization (UHU)

Do these matter to show how good your agency is?



Outcome Measurements

- Fires confined to room of origin
- Firefighter or civilian injury or death rate
- Pets??
- ROSC or patient responses to treatment give
- Fires contained or extinguished with fire sprinklers
- Cost per incident or population
- Insurance Rates



These are harder to measure and do you really know?



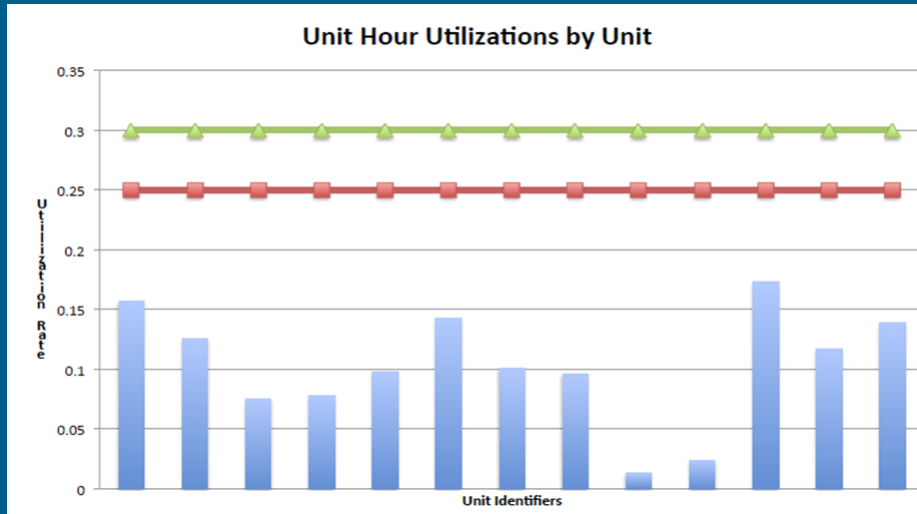
Advanced Areas to Consider Measuring

- Time to patient side
- Unit Hour Utilization
- Cost per Capita
- Cost per Call
- Cost per Mile
- Workers Compensation Rates
- Day and Night Call Volume vs Staffing
- ALS vs BLS – Treatment Outcomes
- ROSC Outcomes

The Advanced Measurement Approach to Operational Risk



Unit Hour Utilization (UHU)



How Busy is Too Busy?

Unit	Responses	Commitment Factor
Engine 1	3316	.21
Engine 2	1404	.20
Engine 3	3533	.17
Truck 4	2966	.19
Engine 5	3646	.22
Engine 6	2289	.12
Engine 7	1977	.19
Engine 8	3194	.17
Truck 10	961	.15

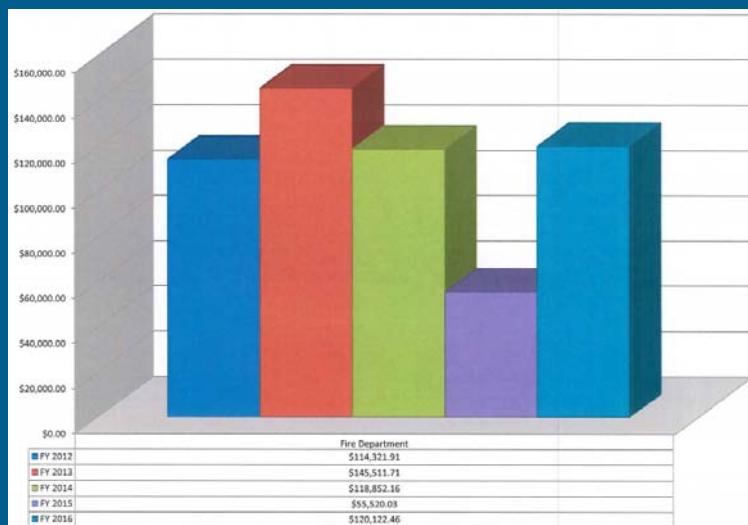


Cost per Capita

Peer City	General Fund Operating Budget (In Millions)	Population Estimate	Per Capita General Fund Expenditures	% of General Fund for Fire Dept.
Chico	\$13.5	88,077	\$153	25%
Davis	\$10.3	68,894	\$149	21%
Lodi	\$9.9	63,338	\$156	23%
Manteca	\$8.6	71,948	\$119	27%
Merced	\$11.0	81,102	\$136	25%
Roseville	\$28.5	127,035	\$224	22%
Turlock	\$7.7	70,365	\$109	24%
Visalia	\$17.3	127,763	\$135	28%
Peer Average	\$13.4	87,315	\$148	24.3%
Clovis	\$13.2	102,188	\$129	23%



Workers Compensation



ALS Treatment

- The Boston study of PD transporting trauma patients and not waiting for Fire ALS.
- Study in 20 US cities found that chest pain patients arrived more quickly by POV than by Ambulance
- ROSC and survivability
 - Patients with out-of-hospital cardiac arrest who received BLS had higher survival at hospital discharge and at 90 days.



REFERENCE: Outcomes after out-of-hospital cardiac arrest treated by basic vs. advanced life support. JAMA Internal Medicine. E1-E9. Available at <http://www.jamainternalmedicine.com>

REFERENCE: Rapid early action for coronary treatment (REACT) demographic, belief and situational factors influencing the decision to utilize emergency medical service among chest pain patients. Circulation

Efficiency vs Effectiveness: Measuring Change

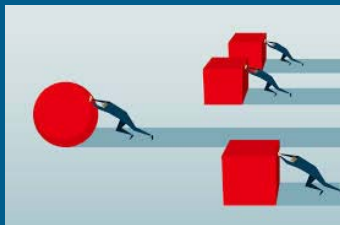
- Measuring Change
- The purpose of measuring things is to determine if your initiatives are successful.
- Success is measured by change in X relative to change in Y.
- If you are not measuring X and Y, then you have no way of knowing if your initiatives are successful.



Efficiency vs Effectiveness

Efficiency

- How much work is getting completed with how many resources?
- How much does it cost per unit of work or unit of input?
- How much do you have in reserve (drawdown)? Did you account for auto/mutual aid resources?



Efficiency vs Effectiveness

- Are you good at what you do? How do you know or can you prove it?
- How good is good or do you even have to be good?



Best Practices and Take-Aways



Take-Aways

Who is the audience or who are the stakeholders?

- *Jane or Joe Citizen*
- *City Manager*
- *Labor*
- *Elected Officials*
- *Chiefs*



- What do these people know?
- What do they need to know?
- What will confuse or alienate them?
- What do they think they know?

Take-Aways Tools

- What tools do you have available?
 - Tables
 - Graphs
 - Maps
 - Text
 - Pictures



These are all forms of statistics.

Take-Aways Delivery modes

- Monthly, quarterly, annual reports
- Websites
- Standards of Cover
- Strategic Plans
- Newsletters
- Tours
- Meetings



EMS System Report
October 1, 2016 to November 30, 2016

Final Score
93.64



Take-Aways

Reporting Productivity, Efficiency and Effectiveness

- Needs to be appropriate to the audience
- Be honest (guard against bias)
- Needs to be repeatable and well-documented methodology
- Must be relevant

We have a **Method.**



Questions



Thank you for your time today

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